

unicameral bone cyst is a definite advance in the management of this perplexing and aggravating lesion.

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Methacrylate Cementation for Giant Cell Tumor

GIANT CELL TUMORS of bone are uncommon, composing approximately 5 percent of true neoplasms of bone. Most are benign but have the potential for metastasis in 2 percent to 6 percent of cases, primarily to the lung. Some studies report a slight female preponderance, and it is generally believed that the tumors occur in the epiphyseal region of the bone after the growth plate closes. About 50 percent occur around the knee but these tumors may occur in any part of the skeleton. They are most often seen in young adults, but may present at any age.

Histologically the giant cell tumor is almost indistinguishable from the brown tumor of hyperparathyroidism, so it is important that serum calcium, phosphate, alkaline phosphatase and perhaps parathormone levels be determined before a treatment plan is formulated.

Surgical intervention is the primary treatment of benign giant cell tumor of bone unless the location precludes reasonable surgical access. X-ray therapy is effective, but may be contraindicated except in extenuating circumstances. Curettage and bone graft failed to eradicate the tumor in almost half of reported cases; amputation is unnecessary in uncomplicated cases. An adequate en bloc resection results in the best local control, but often requires extensive and complicated reconstruction. For these reasons, implantation of methyl methacrylate resin after thorough curettage (wide marginal resection) is more frequently being done. The monomer is inherently toxic to the surrounding tissue, and the polymerization is exothermic, producing a surface temperature that approximates that of pasteurization. Because tumor cells in general are known to be heat sensitive and may be injured by the monomer, implantation of a large bolus of bone cement is theoretically beneficial in tumor control. There are two actual advantages, however. The joint and involved body segments can be rapidly rehabili-

tated following cementation. Also, gross persistence of tumor surrounding the radiopaque cement is easier to perceive on x-ray films, so that further treatment can be instituted without delay. If there is no evidence of tumor recurrence noted on follow-up evaluation, the cement can either be left in situ indefinitely or removed electively and the cavity filled with bone graft.

In at least one center, methacrylate implantation is done after cavitary cryotherapy using liquid nitrogen, usually followed by later bone grafting. In older or inactive patients who are candidates for total joint replacement, the involved bone can be resected, autoclaved—causing necrosis of the tumor—and returned immediately to the patient with methyl methacrylate supplementation. In this procedure, methacrylate is used to fill the space previously occupied by the tumor and to provide rigid fixation for the total joint implant.

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Limb Replantation

IN THE PAST TEN YEARS limb replantation has progressed from an experimental procedure done in only a few centers to a procedure that is available in many communities. The indications for replantation are now more clearly defined, as the techniques' surgical limitations have been tested and patients who have undergone such procedures have been observed for several years.

Avulsed, crushed and severely mutilated limbs are difficult if not impossible to replant because of widespread tissue destruction. Even the most cleanly amputated part is never normal following replantation. A shortened skeleton, stiff joints, diminished sensibility and cold intolerance are the commonly encountered sequelae, so a patient's functional interests are sometimes better served by having the amputation site closed rather than being burdened with a viable but dysfunctional part. The following sharp, relatively well-localized amputations are potentially suitable for replantation: isolated thumb amputations at any level proximal to the interphalangeal joint; multiple finger amputations at levels proximal to the distal joints, and hand, wrist and forearm amputations.